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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,198	09/17/2003	Martin A. Afromowitz		8791

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EXAMINER	
WALKE, AMANDA C	
ART UNIT	PAPER NUMBER
1752	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/666,198	AFROMOWITZ, MARTIN A.	
	Examiner	Art Unit	
	Amanda C. Walke	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Lapin et al (6,251,557).

Lapin et al disclose a photosensitive resin composition for use in rapid prototyping, and in particular, a resin made from both a cationic curable epoxy resin system and a radical-curable acrylate system. The process of the present invention is advantageous in case the curing is performed with a laser, the laser is motion controlled with a computer, with the laser beam focused on a relatively tiny area of the pre-determined desired to-be-cured area, so as to have the laser scan over the to-be-cured area to at least substantially initiate the cure of the photosensitive resin composition. Presently preferred lasers are the helium/cadmium and the argon ion lasers. Particularly preferred are bisphenol resins such as bisphenol-A or bisphenol-F based epoxy resins. These type of resins are commercially available. Both liquid and solid bis-phenol based epoxy resins exist. Examples of suitable epoxy resins include EPON.RTM. resins from Shell such as EPON.RTM. 1001, 1002 and 1003. Analogous products exist e.g. from Dow Chemical as DER 661 and higher homologous. Other examples of suitable solids epoxy resins are the epoxy-novolac with about 6 phenol groups and an epoxy equivalent weight of about 200 (ERR

0100 from Union Carbide) and the polyglycidylether of o-(resol-formaldehyde)Novolac. Although UV-curing is preferred, as the photosensitive compositions are exposed to visible light easily, visible light curable photosensitive compositions have the same advantages. In particular, laser curing can be suitably be performed with visible light-lasers. In that case, the photoinitiator system has to be adapted with the use of suitable sensitizers and/or initiators to give good cure at wavelength of about 400 to about 600 nm.

The resin composition according to the invention is preferably used with a rapid prototyping process involving the use of a photomask to build objects. Such a method is, for instance, described in U.S. Pat. No. 5,519,816 which is incorporated herein by reference. In that method, a high power UV lamp is used to flood-expose one layer of a liquid photopolymer at a time through a negative, or mask. The mask is generated electrostatically on a glass plate with a toner powder. A 2 to about 20 second exposure from the lamp will usually be sufficient to solidify a thin surface layer of a photopolymer. The exposed mask is physically wiped clean and electrostatically discharged to prepare it for the next cross-section image. At the same time, the uncured photopolymer, which is still liquid, is blown (air-knifed), vacuumed or washed away. The cavities left by the uncured polymer are filled with hot wax. The wax solidifies to form a support structure for the next layer. Finally, the entire surface is milled with a cutter to make it ready for the next polymer layer. The cycle is repeated, so that the object is built up layer by layer. The resin composition according to the present invention is advantageously used in such a process, not only because of the very good mechanical properties, but also because the resin has the capability of achieving good through cure (no phase-separation on cure), with sharp cured-uncured boundaries, and very little photomask contamination.

The liquid epoxy resin, together with the liquid acrylate compounds can be used to adjust the viscosity of the prec-cured composition to a suitable range. In particular, the viscosity of the photosensitive resin composition can be between about 100 mPa.s and about 3000 mPa.s, measured at the application temperature. For laser-cured rapid-prototyping processes, the viscosity preferably is between about 100 mPa.s to about 500 mPa.s, whereas the viscosity for processes that uses a photo-mask, the viscosity preferably is between about 1,000 mPa.s to about 3,000 mPa.s at the application temperature. The application temperature can be varied according to selected components of the resin composition and the other parameters used in the process. Preferably the application temperature can be between about 25.degree. C. to about 40.degree. C. and more preferrably between about about 30.degree. C. to about 32.degree. C.

The resin composition of the present invention exhibits good mechanical properties upon cure. In particular, it is possible to achieve upon full cure a film of about 75 .mu.m thickness having a secant modulus of higher than about 1,000 MPa (at 2.5 % elongation), and an elongation above about 5%, and preferably higher than about 8%.

Given the teachings of the method and resulting 3-dimensional product taught by Lapin et al, the instant claims 1-7 are anticipated.

Response to Arguments

3. Applicant's arguments filed 4/28/2005 have been fully considered but they are not persuasive.

Applicant has argued that the Lapin et al reference fails to anticipate the instant invention as the reference does not teach a 3-dimensional product which has an area of polymerization having

varying thicknesses. As admitted by applicant, claims 1 and 2 are product by process claims, thus as stated in the MPEP M.P.E.P. § 2113:

"Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)... "The Patent Office bears a lesser burden proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983).

It is the examiner's position that the product at Lapin et al discloses a product that is formed of a material similar to the instantly claimed, and given that its 3-D pattern is formed by a mask, the final product would comprise a pattern wherein the polymerizable material would have varying thicknesses after development because the broadest interpretation would encompass a polymerizable composition that has been exposed through a mask then developed and the varying thickness would include areas where the material was removed by development

and areas where a pattern remains. Therefore, the Lapin et al reference appears to meet the instant claim limitations.

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Amanda C Walke
Examiner
Art Unit 1752

ACW
July 21,2005